<u>Review for Test #3 over Ch 6</u>

Work all the problems on a separate piece of paper showing all steps.

### <u>Factor the Following Completely:</u>

1) $14x^3 - 7x^2y$

2) $3x^2 - 27y^2$

3) $x^2 - 7x + 6$

4) $6a^3b^5 + 12a^4b^4$

5) $x^2 + 25$

6) $x^3(y - a) + 27(y - a)$

7) $45a^3b - 120a^2b^2 + 80ab^3$

8) $3x^4 - 11x^2 - 4$

9) $-125x^2 + 80y^2$

10) $15a^2b - 6ab + 9ab^2$

11) $4y^3 + 12y^2 - 7y$

12) $9r^3 + 64rs^2$

13) $8x^3 - 125$

14) $10y^3z - 7y^2z^2 + yz^3$

15) $m^4 - 16$

16) $98v^2 - 18t^2$

17) $36w^2 - 60w + 25$

18) $5x - 5y + 10 - cx + cy - 2c$

19) $18x^3y - 42x^2y^2 - 36xy^3$

20) $(x - 5)^2 + 3(x - 5) - 4$

21) $147x^2 + 210xy + 75y^2$

22) $7x^2 - 21x - 3xy + 9y$

23) $b^4 - 13b^2 + 36$

24) $-25a^3b^4 + 40a^3b^3 - 15a^3b^2$

25) $256x^4 + 108xy^3$

26) $2(x - 2y)^2 + 9(x - 2y) + 9$

27) $4x^2 + 28x + 49 - (3y - 2)^2$

28) $(x - 3)(2x + 5) - (x - 3)^2$

29) $x^6 - 64y^6$

30) $x^6 + 64y^6$

31) $80x^2 - 50x + 70$

32) $x^4 + 256$

<u>Solve the following:</u>

33) $81x^2 - 16x = 0$

34) $9x^2 + 36 = 36x$

35) $x^2(3x - 14) = 5x$

36) $(x - 3)(x - 2) = 2$

37) $2x^2(x - 3) - 7x(x - 3) - 4(x - 3) = 0$

38) $3x^5 - 24x^3 = 27x$

Solve the following:

39) Find the length of the missing side and then find the area of:

25 cm

7 cm
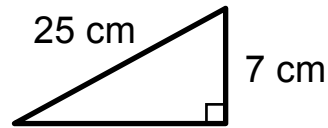
40) Henry Lee has a rectangular Victorian flower garden measuring 34 yards by 58 yards. If a path runs along the diagonal of the garden, how long (to the nearest hundredth) is the path?

Set-up the equation to the following word problems and then solve:

41) The sum of the squares of two consecutive odd integers is 514. Find the integers.

42) The length of a rectangle is four less than the width. The area of the rectangle is 21 square feet. Find the dimensions.

43) One number is seven more than twice another number. If their product is four, find the numbers.

44) A ball is thrown from the top of a cliff with an upward velocity of 96 feet per second. How many seconds after the ball is thrown will it hit the ground if the ground is 256 feet below the cliff. Use the formula $h = vt - 16t^2$ where h is the height, v is the velocity, and t is the time. (hint: the height is negative when the ball hits the ground).

45) The area of a triangle is 48 square inches. If the sum of the base and height is 20 inches, find the length of the base and height if the base is longer than the height.

46) One leg of a right triangle is one centimeter more than the other. The hypotenuse is one centimeter less than twice the length of the shorter leg. Find the lengths of the sides of the triangle.

47) The width of a rectangle is numerically equal to four times the square of the length. If the area of the rectangle is 500 square meters, find the dimensions.

48) If the dimensions of a square are tripled, the area of the square increases by 128 square inches. Find the original dimensions.

Answers:

1) $7x^2 (2x - y)$ 2) $3(x - 3y)(x + 3y)$ 3) $(x - 1)(x - 6)$ 4) $6a^3b^4 (b + 2a)$

5) Prime   6) $(y - a)(x + 3)(x^2 - 3x + 9)$ 7) $5ab (3a - 4b)^2$ 8) $(3x^2 + 1)(x - 2)(x + 2)$

9) $-5 (5x - 4y)(5x + 4y)$ 10) $3ab (5a - 2 + 3b)$ 11) $y (2y + 7)(2y - 1)$

12) $r (9r^2 + 64s^2)$ 13) $(2x - 5)(4x^2 + 10x + 25)$ 14) $yz (5y - z)(2y - z)$

15) $(m - 2)(m + 2)(m^2 + 4)$ 16) $2(7v - 3t)(7v + 3t)$ 17) $(6w - 5)^2$

18) $(5 - c)(x - y + 2)$ 19) $6xy(3x + 2y)(x - 3y)$ 20) $(x - 1)(x - 6)$ 21) $3(7x + 5y)^2$

22) $(x - 3)(7x - 3y)$ 23) $(b - 2)(b + 2)(b - 3)(b + 3)$ 24) $-5a^3b^2(5b - 3)(b - 1)$

25) $4x (4x + 3y)(16x^2 - 12xy + 9y^2)$ 26) $(2x - 4y + 3)(x - 2y + 3)$

27) $(2x - 3y + 9)(2x + 3y + 5)$ 28) $(x - 3)(x + 8)$

29) $(x - 2y)(x^2 + 2xy + 4y^2)(x + 2y)(x^2 - 2xy + 4y^2)$ 30) $(x^2 + 4y^2)(x^4 - 4x^2y^2 + 16y^4)$

31) $10 (8x^2 - 5x + 7)$ 32) Prime   33) $\{0, \frac{16}{81}\}$ 34) $\{2\}$ 35) $\{-\frac{1}{3}, 0, 5\}$

36) $\{1, 4\}$ 37) $\{-0.5, 3, 4\}$ 38) $\{-3, 0, 3\}$

39) The length of the base is 24 cm, the area of the triangle is 84 cm^2.

40) The path is ≈ 67.2 yards long   41) The integers are 15 & 17 or -17 & -15.

42) The length is 3 ft and the width is 7 ft.

43) The numbers are -4 and -1 or $\frac{1}{2}$ and 8.

44) It will hit the ground in 8 seconds.

45) The base is 12 in and the height is 8 in.

46) The lengths of the sides are 3 cm, 4 cm, and 5 cm.

47) The length is 5 m and the width is 100 m.   48) The length of each side is 4 in.